

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
25 April 2002 (25.04.2002)

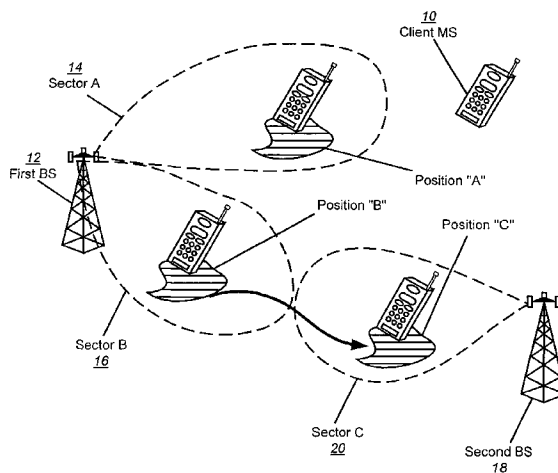
PCT

(10) International Publication Number  
WO 02/033982 A3

- (51) International Patent Classification<sup>7</sup>: **H04Q 7/20**
- (21) International Application Number: PCT/US01/32464
- (22) International Filing Date: 16 October 2001 (16.10.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/241,268 17 October 2000 (17.10.2000) US  
60/248,900 14 November 2000 (14.11.2000) US
- (63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application:  
US Not furnished (CIP)  
Filed on 16 October 2001 (16.10.2001)
- (71) Applicant (for all designated States except US): **DENSO CORPORATION** [JP/JP]; 1-1, Showa-cho, Kariya-shi, Aichi-ken 448-8661 (JP).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **HUNZINGER, Jason, F.** [CA/US]; 3425 Calle Del Sur, Carlsbad, CA 92009 (US).
- (74) Agents: **KUBOTA, Glenn, M.** et al.; Morrison & Foerster LLP, Suite 3500, 555 W. Fifth Street, Los Angeles, CA 90013-1024 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**  
— with international search report  
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: FORWARD LINK BASED RESCUE CHANNEL METHOD AND APPARATUS FOR TELECOMMUNICATION SYSTEMS



(57) Abstract: A forward rescue procedure (FRP) for preventing loss of signal and dropped connections between a mobile station (10) and the infrastructure (14) in a wireless telecommunications network (12) is disclosed. The FRP allows wireless systems to recover from forward link failures at the mobile station that would otherwise result in dropped connections. Examples of failure scenarios that can be overcome using the FRP include forward link Layer 2 acknowledgement failures and loss of forward link signal due to a fade that causes loss of signal for a period of time exceeding a threshold value. In response to a potential connection drop situation, a mobile station will autonomously add base station pilot channels to the active set of its rake receiver in order to rescue the connection in danger of dropping. Concurrently, the wireless network infrastructure will initiate transmission on alternative forward link channels that are likely to be monitored by the mobile station during an FRP. If the same channels are monitored by the MS and transmitted on by the infrastructure, the connection in danger of dropping can be rescued.



WO 02/033982 A3



**(88) Date of publication of the international search report:**  
15 May 2003

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/32464

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : H04Q 7/20

US CL : 455/437, 10, 504

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 455/437, 10, 504, 414, 423, 63, 438, 444, 513

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

BRS

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,267,261 A (BLAKENEY, II et al) 30 November 1993, col 2 lines 20-59, col 3 line 27-col 4 line 35, col 6 lines 6-34, col 18 line 53-col 19 line 23	1-8, 11-15, 18-23, 27-31, 34-41, 44-52, 55, 56, 59-61, 63, 64, 66, 67, 70-74, 76-78, 80-83, 85, 87-91
X,E	US 6,360,100 B1 (GROB et al) 19 March 2002, col 4 line 6-col 6 line 30	1, 2, 7-3144, 45, 59, 70-74, 80, 8187, 91,
A	US 6,052,594 A (CHUANG et al) 18 April 2000, see whole document	1-91



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"G" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

21 AUGUST 2002

Date of mailing of the international search report

07 MAR 2003

Name and mailing address of the ISA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

CHARLES R CRAVER

Telephone No. (703) 305-3965

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US01/32464

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,937,019 A (PADOVANI) 10 August 1999, see whole document	1-91
A,P	US 6,253,023 B1 (HACENA et al) 26 June 2001, col 2 line 48-col 4 line 30	1-91